Throwing Injuries in Young Athletes

Steven Cuff, MD, FAAP
Nationwide Children’s Hospital

Shoulder and elbow pain are common complaints in young baseball and softball players, but given the developing skeletons of these athletes, pain in these areas should always raise a concern. Open physes, muscle weakness, poor biomechanics and overuse all predispose young throwers to injury.

For baseball pitchers specifically, additional risk factors for shoulder and elbow injury include:
- Pitching with arm fatigue
- Pitching > 8 months/year
- Playing catcher in addition to pitching
- Participating in showcases, concurrent leagues or travel ball
- Throwing > 80 pitches in a game or 100 innings in a year
- Fastball velocity > 85mph

Two of the most common injuries in young throwers are Little League Shoulder (proximal humeral physis injury) and Little League Elbow (medial epicondyle apophysitis).

**LITTLE LEAGUE SHOULDER**
Little League Shoulder, which is more common in boys, is seen most often between the ages of 11-14 and is due to rotational forces on the physis during the acceleration, deceleration and follow-through phases of throwing. Kids present with gradual onset of pain in the anterior, posterior, or most commonly lateral, aspect of the proximal humerus. They are typically tender to palpation over the physis on exam and may have pain with shoulder range of motion in addition to pain and weakness with strength testing of the shoulder, especially in external rotation. X-rays may be normal early on but with advanced injury can show widening of the physis. Initial treatment consists of rest from throwing and any other pain inducing activity until pain free (typically 4-6 weeks) or improvement of x-ray abnormalities when present. A course of rehabilitation is helpful to improve strength and flexibility, assess throwing mechanics and supervise a gradual throwing/pitching progression.

**LITTLE LEAGUE ELBOW**
Little League Elbow is also most common in the early to mid-teen years but can present any time before the medial epicondyle physis closes around 15-16 years of age. Caused by chronic stress from valgus overload and contraction of the flexor-pronator muscles, it is characterized by the insidious onset of pain in the medial elbow with tenderness at the medial epicondyle, pain but no laxity with valgus stress on the elbow and possibly pain/weakness with resisted wrist flexion. X-rays should be obtained to look for widening of the physis and rule out an avulsion fracture. Treatment is similar to that described above for Little League Shoulder.

Many throwing injuries can be prevented with the right precautions. This starts with following pitch counts and obtaining adequate rest between pitching outings. The maximum number of pitches that should be thrown per game as well as the amount of rest needed varies by age. Guidelines and prevention tips endorsed by Little League Baseball & Softball and USA Baseball are available at http://m.mlb.com/pitchsmart.

In addition to games, kids should track pitches thrown in practice and showcases and avoid playing in multiple leagues at the same time. Young pitchers should avoid playing catcher when not pitching and all players should take at least 2-3 months off from throwing each year. Athletes should be encouraged to report shoulder and elbow pain and seek evaluation and treatment for persistent pain to avoid long term problems.